

U.S. Serial No. 10/652,114

Attorney Docket No. 10004187-3

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Claims 1-29 (canceled).

30. (currently amended) An apparatus for synthesizing an array of biopolymers on the surface of a support, said apparatus comprising:

(a) a plurality of flow cells, wherein each of the flow cells comprises a chamber and a holder for said support in said chamber and wherein said support is a strip, a plate or flat glass and wherein said array comprises a plurality of biopolymer features arranged in a pattern on a surface of the support,

(b) one or more fluid dispensing stations in fluid communication with one or more of said plurality of flow cells,

(c) a station for monomer addition to said surface of said support, and

(d) a mechanism for moving a support to and from said station for monomer addition and a flow cell and for moving said the support from one flow cell to another flow cell, wherein said mechanism comprises a robotic arm and a holding element for engaging said support and wherein said holding element comprises a vacuum-activated fork or grasping elements, and

(e) a controller for controlling the movement of said mechanism, said controller comprising a computer program that provides for moving said support to and from said station for monomer addition and a flow cell and for moving said support from one flow cell to another flow cell.

31. (canceled) .

32. (previously presented) An apparatus according to Claim 30 wherein said grasping elements comprise movable finger-like projections.

33. (previously presented) An apparatus according to Claim 30 wherein each of said flow cells comprises at least one inlet and an outlet.

34. (original) An apparatus according to Claim 33 wherein said apparatus further comprises a manifold in fluid communication with said inlet.

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35. (previously presented) An apparatus according to Claim 30 wherein said apparatus further comprises a purification system in fluid communication with said outlet wherein said purification system comprises a chromatographic column.

36. (previously presented) An apparatus according to Claim 35 wherein said apparatus further comprises a holding chamber in fluid communication with said purification system.

37. (previously presented) An apparatus according to Claim 36 wherein said apparatus further comprises a sensor in fluid communication with said holding chamber wherein said sensor determines the condition of a fluid reagent and, based on said determination, communicates with a valve to direct at least a portion or all of the fluid reagent to the inlet of a flow cell to be combined with fresh fluid reagent or sent to waste.

38. (previously presented) An apparatus according to Claim 30 wherein said apparatus further comprises a sensor in fluid communication with said outlet wherein said sensor determines the condition of a fluid reagent and, based on said determination, communicates with a valve to direct at least a portion or all of the fluid reagent to the inlet of a flow cell to be combined with fresh fluid reagent or sent to waste.

39. (previously presented) An apparatus according to Claim 30 wherein reagents for a step of said synthesis are in separate fluid dispensing stations in fluid communication with one of said flow cells and reagents for another step of said synthesis are in separate fluid dispensing stations in fluid communication with another of said flow cells.

40. (withdrawn) A method comprising using an array, prepared by an apparatus according to claim 30, by exposing the array to a sample and reading the array.

41. (withdrawn) A method according to claim 40 comprising forwarding data representing a result obtained from a reading of the array.

42. (withdrawn) A method according to claim 41 wherein the data is transmitted to a remote location.

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43. (withdrawn) A method according to claim 40 comprising receiving data representing a result of an interrogation obtained by the reading of the array.

44. (currently amended) An apparatus for synthesizing an array of biopolymers on the surface of a support, said apparatus comprising:

(a) a plurality of flow cells wherein said flow cells comprise a chamber, a holder for said support, at least one inlet and an outlet, wherein each of said inlets is in fluid communication with a manifold and wherein said outlet is in controlled fluid communication with one or more purification systems, holding chambers and sensors, wherein said support is a strip, a plate or flat glass and wherein said array comprises a plurality of biopolymer features arranged in a pattern on a surface of the support,

(b) one or more fluid dispensing stations in fluid communication with one or more of said plurality of flow cells by means of said each manifold,

(c) a station for monomer addition to said surface of said support,

(d) a mechanism for moving a support to and from said station for monomer addition and a flow cell and for moving said the support from one flow cell to another flow cell, wherein said mechanism comprises a robotic arm and a holding element for engaging said support and wherein said holding element comprises a vacuum-activated fork or grasping elements, and

(e) a controller for controlling the movement of said mechanism, said controller comprising a computer program that provides for moving said support to and from said station for monomer addition and a flow cell and for moving said support from one flow cell to another flow cell.

45. (previously presented) An apparatus according to Claim 44 wherein said grasping elements comprise movable finger-like projections.

46. (previously presented) An apparatus according to Claim 44 wherein said purification system in fluid communication with said outlet comprises a chromatographic column.

47. (original) An apparatus according to Claim 44 wherein said apparatus further comprises a holding chamber in fluid communication with said purification system.

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48. (previously presented) An apparatus according to Claim 47 wherein said apparatus further comprises a sensor in fluid communication with said holding chamber wherein said sensor determines the condition of a fluid reagent and, based on said determination, communicates with a valve to direct at least a portion or all of the fluid reagent to the inlet of a flow cell to be combined with fresh fluid reagent or sent to waste.

49. (previously presented) An apparatus according to Claim 44 wherein said apparatus further comprises a sensor in fluid communication with said outlet wherein said sensor determines the condition of a fluid reagent and, based on said determination, communicates with a valve to direct at least a portion or all of the fluid reagent to the inlet of a flow cell to be combined with fresh fluid reagent or sent to waste.